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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,610	07/09/2003	Yixiang Duan	S-100,580	3355
35068	7590	10/12/2006		
LOS ALAMOS NATIONAL SECURITY, LLC LOS ALAMOS NATIONAL LABORATORY PPO. BOX 1663, LC/IP, MS A187 LOS ALAMOS, NM 87545			EXAMINER MAYEKAR, KISHOR	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/616,610

**Applicant(s)**

DUAN, YIXIANG

**Examiner**

Kishor Mayekar

**Art Unit**

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>07/03 &amp; 10/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3, the Markush group is not in the format as "selected from the group consisting of ...".

In claim 4, the phrase "where said reactive gas ... and said support gas ... providing a layer ..." is either incomplete or confusing.

### *Claim Rejections - 35 USC § 102 and § 103*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3 and 12-15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kusano et al. (5,466,424) in light of Kusano et al. (US 5,041,304). Kusano '424's invention is directed to a corona discharge surface treatment method and apparatus thereof. Kusano '424 discloses that the apparatus comprises the recited plasma generating region and first and second electrodes within the plasma generating region where the electrodes are of parallel plate electrodes and the plasma generation is by a DC discharge (Fig. 1 and col. 5, lines 5-26 and col. 6, lines 21-31). Kusano '424 also discloses in col. 4, lines 53-57 that the treatment is carried with a reactant gas diluted with other gases such as argon. Kusano '304 shows in a surface plasma treatment under atmospheric pressure a line for supplying a reactive gas, a line for supplying another gas, and a line for mixing the reactive gas with the other gas and for supplying the mixture to the plasma generating region (Fig. 1). As such the above claims are anticipated by the teachings of Kusano '424 in light of Kusano '304. If not, the

provision of the mixed gas line from two separate gas lines would be within the level of ordinary skill in the art.

As to the subject matter of claim 3, it is inherently in Fig. 1 of Kusano' 304'.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusano '424 in light of Kusano '304 in view of Bowers (US 5,830,540). The difference between the reference as applied above and the instant claim is the recited configuration of the gas inlets. Bowers shows the limitation in a plasma surface treating apparatus (Fig. 2). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the reference's teaching as suggested by Bowers because the provision of the limitation would result in shielding the plasma and the article from the surrounding atmosphere when the plasma is under atmospheric pressure.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusano '424 in light of Kusano '304 in view of Banks et al. (US 5,693,241). The difference between the reference as applied above and the instant claim is the provision of flowmeter. Banks shows the limitation in a plasma surface treating apparatus (Fig. 2). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the reference's teaching as suggested by Banks

because this would result in precise mixing and control flow of the reactive gas and other gas.

8. Claims 4 and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusano '424 in light of Kusano '304 in view of Okamoto et al. (US 6,224,837 B1) and/or Dong et al. (US 7,079,370 B2). The differences between the reference as applied above and the instant claim are the provision of gas inlets' configuration and the power source. Okamoto shows the limitations in a corona discharge apparatus of the boosting of the DC power from the battery by a DC-DC converter prior to the corona discharge device (Fig. 4) and the use of a transformer in the case of using a voltage source with a frequency (Fig. 7). Dong shows in an apparatus for generating atmospheric pressure plasma that the provision of the configuration of separate gas inlets in addition to an inlet with the mixed gases (Figs. 7 and 5). Dong also shows that DC or AC voltage source can be used (col. 7, lines 50-65) and the voltage may be constant or pulsed (col. 9, lines 33-35). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the reference's teaching as suggested by Okamoto or Dong because this would result in providing proper voltage to be applied to electrodes or the selection of any of known equivalent configurations of gas inlets would be within the level of ordinary skill in the art.

As to the subject matter of each of claims 9-11, the selection of any of known equivalent batteries for the power source would be within the level of ordinary skill in the art.

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusano '424 in light of Kusano '304 in view of Iwanaga (US 5,411,713). The difference between the reference as applied above and the instant claim is the provision of the plurality of the plasma generating regions. Iwanaga shows the limitations in a plasma-generating apparatus (Figs. 11, 13 or 14). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the reference's teaching as suggested by Iwanaga because this would result in increasing the efficiency and the throughput of the apparatus. Further, it has been held that the motivation to make a specific structure is always related to the properties or uses one skilled in the art would expect the structure to have, *In re Newell* 13 USPQ 2d 1248, *Fromson v. Advance Offset Plate* 225 USPQ 26; *In re Gyurik* 201 USPQ 552.

#### ***Double Patenting***

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the

reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1, 2 12 and 13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4 and 5 of U.S. Patent No. 6,734,964 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the recited gas supplies and plasma generating region are equivalent to the patent's means for flowing a gas and hollow tube, respectively.

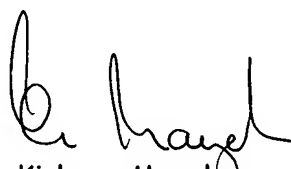
### *Conclusion*

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kishor Mayekar whose telephone number is (571) 272-1339. The examiner can normally be reached on Monday-Thursday.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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Art Unit 1753